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Does epistemology matter for educational practice?

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Introduction

Lankshear, Peters & Knobel (2000) suggest that “The digital age is throwing many of our educational practices and emphases and their underlying epistemological assumptions, beliefs, concepts and substantive theories into doubt”. In particular, because of new technology, educational philosophers must reconsider “epistemological matters in relation to educational theory and practice” as a matter of “very high priority”. Of course, philosophers need no excuse at all to reconsider anything; but since Lankshear, Peters & Knobel argue forcefully that “key elements of the epistemological model that has underpinned education throughout the modern-industrial era” are brought into question by the fact of a “digital age where more and more of our time, purposes and energies are invested in activities involving new communications and information technologies”, it is perhaps worth asking whether the advent of new technology can, in itself, have profound implications for epistemology, and— more fundamentally – how exactly does epistemology “underpin” or “underlie” educational practice?

In what follows, the main practical educational questions that I have chosen to consider with respect to issues of epistemology are:

- What should be taught?
- How should it be taught?
- How can one tell what has been learned?

This paper is in four parts. The first part outlines the case made by Lankshear, Peters & Knobel that traditional versions of epistemology must be replaced by a post-modern social epistemology because of changed social practices brought about by new technology; and that educational practice must consequently be reconsidered. The second part of the paper considers some of the claims made about the influences of technology on contemporary knowledge practices. The third part of the paper suggests that the argument offered by Lankshear, Peters & Knobel works as a whole if “epistemology” is identified with “accounts of knowledge practices”. The final part considers whether there may be more to epistemology than just social epistemology.

A post-modern social epistemology

Lankshear, Peters & Knobel see educational practice as at least strongly influenced by a particular historical account of the nature of knowledge:

“The broad epistemological model which has dominated school education since its inception has been the standard view of knowledge which has dominated Western thought since the time of Plato. This is widely known as the ‘justified true belief’ model. According to this epistemology, for A (a person, knower) to know that p (a proposition) A must *believe* that p , p must be *true*, and A must be *justified* in believing that p .”

Whilst acknowledging that there are variations in this model with respect to the nature of truth and the limits of talk about “reality”, they highlight several aspects of this account that they

suggest have implications for educational practice. They also relate these aspects to contemporaneous technologies.

We consider below these aspects – discipline-based study, proposition-based knowledge, objective knowledge, individual knowing, and the pursuit of truth – and how Lankshear, Peters & Knobel see the advent of new technologies as confronting classical Western epistemology with post-modern themes and a recognition of the role of society, and provide some speculations on possible “implications” for education.

From disciplines to communities of practice

“Throughout the modern-industrial era of print... the primary object of learning was the content of subjects” derived from “the disciplines”. These disciplines tell students not only what they “need to know about the world in order to function effectively in it” but also how this knowledge is discovered and warranted by experts.

It is therefore presumably in most part distinctions in the means by which true propositions are arrived at and by which justification is achieved that influence answers to the questions of what should be taught and how it should be taught. The question of how one can tell what has been learned is informed not just by the requirements that what students believe happens to be true and that they believe the true things that we want them to know, but also by the requirement that they can justify how they came to believe these things with respect to the methods of warranting appropriate to the particular discipline.

Lankshear, Peters & Knobel intimate that the advent of the Internet is moving knowledge formation away from rigidly-defined discipline-based domains of activity into a multiplicity of language games, a plurality of voices, defying centralisation and more about relations than content. “Epistemology” is re-envisaged in social terms as “practices of knowing that reflect a range of strategies for ‘assembling’, ‘editing’, ‘processing’, ‘receiving’, ‘sending’, and ‘working on’ information and data to transform ‘data’ into ‘knowledge’”. There are parallels with Wittgenstein’s “performative” epistemology that “conceives knowing as making, doing and acting”.

Should students therefore become more like contemporary “knowledge workers” than nascent classical academics? Why should the curriculum be framed in terms of “subjects” defined using arguably outmoded notions of truth and warranting? Lankshear, Peters & Knobel aim merely to initiate such discussion, and do not set out to propose comprehensive answers at this stage. But one can see that questions such as how one can tell what has been learned must have rather different answers if “true belief” is replaced with something like “current views in this particular socio-cultural context” and “logical justification” is replaced with something like “explanation in terms of currently accepted views or by means of current social practices of warranting”.

From scientific propositions to rhetoric and social norms

“... the standard epistemology constructs knowledge as something that is carried linguistically and expressed in sentences/propositions and theories. This is hardly surprising considering that for two millennia the modes for producing and expressing knowledge have been oral language and static print. To the extent that images and graphics of various kinds have been employed in texts their role has been, literally, to illustrate, summarise or convey propositional content.”

Students and teachers have typically seen books as repositories of knowledge, and these books contain valuable propositions that describe and explain some portion of human wisdom. This has applied to natural sciences, mathematics, history, languages, literature, art, technology, religion and music. Students have been assessed by written (or sometimes oral) examinations, in which impartial and circumspect words play the central role.

Yet now, “The multimedia realm of digital ICTs [information and communication technologies] makes possible – indeed, makes *normal* – the radical convergence of text, image and sound in ways that break down the primacy of propositional linguistics forms of ‘truth bearing’”. Images

and sounds can evoke nuanced cognition and promote change in subtle ways. Moreover, “rhetorical and normative modes displace the scientific-propositional”, and perhaps processes of knowledge construction through rituals and iconographies will become more important than text-based argumentation.

Schools and universities have already started to employ video and audio clips, animations, simulations, virtual reality, interactive diagrams, and other multimedia ICT. Technology allows feelings of “presence” and interactivity that can go far beyond not only what is possible with books but also what is possible in life unmediated by ICT. Furthermore, because of the Web, text itself need no longer be linear for authors or readers; because of mostly unfiltered publishing and powerful search engines, text need no longer be solely from “impartial” authorised sources such as teachers or textbooks; and because of email and news groups, extensive peer-to-peer and peer-to-expert interactions can occur at speed and simultaneously with other learning experiences.

However, curriculum documents, classroom practice and examination policies still give primacy to the written and spoken word in linear, neutral and singly-voiced form. Should they change to reflect the new realities of knowledge formation beyond the classroom and lecture hall?

From objective knowledge to performance epistemology

“... knowing has generally been seen as an act we carry out on... something that already exists.”. The familiar Platonic view is that there is an autonomous body of knowledge “out there” that can be freed from the prejudices of those who discovered it.

With regard to education, it is usually claimed that the central problems are therefore how to identify the most important parts of the knowledge humanity has discovered, how to introduce students to this body of work and (for some) how to discover more.

Lankshear, Peters & Knobel suggest, however...

“In various ways, however, the kind of knowing involved in social practices within the diverse spaces of new ICTs is very different from this. More than propositional knowledge of what already exists, much of the knowing that is involved in the new spaces might better be understood in terms of a performance epistemology – knowing as an ability to perform.

“At one level we can understand this in terms of procedures like knowing how to make and follow links when creating and reading Web documents. At another level it is reflected in Lyotard’s observation that under conditions of the changed status of knowledge the kinds of knowledge most needed by knowledge workers include procedural knowledge of languages like telematics and informatics, and knowledge of how to interrogate information sources.”

They argue that whereas traditional epistemology has led to views of “normal science” that “presuppose stability in the rules of the game as the norm and paradigm shifts as the exception”, performances that gain attention in the future may require knowledge “of how to make new moves in a game and how to change the very rules of the game”. Encouraging students to do this with respect to traditional classroom subjects might be seen by many parents and educationists as radical.

From individual knowing to distributed cognition

“... practices involving new media help to identify weaknesses in traditional individualistic epistemologies which, following Descartes, have always existed. Problems with the notion that knowing, thinking, believing, being justified and so on are located within the individual person... have become readily apparent in postmodernity. Theories of distributed cognition, for example, have grown in conjunction with the emergence of ‘fast capitalism’ and networked technologies”

In addition, the problem of individuals suffering information overload has led to the popularity of dispersed, multi-disciplinary teams, for information gathering, organisation and dissemination. Hence, Lankshear, Peters & Knobel suggest, “a particular ‘assemblage of knowledge that is brought together – however momentarily – in the product of an individual may more properly be understood as a *collective* assemblage involving many minds (and machines).”.

Again, curriculum documents, classroom practice and examination policies assume that the individual student is the focus of a development effort that is on a continuum, and independent of peers and others in society.

From pursuing truth to pursuing market value

“... none of the three logical conditions of justified true belief is necessary for information. ... Belief *may* follow from using information, although it may not, and belief certainly need not precede the use of information.”. Moreover the efficacy of commodified research knowledge – which the sponsors can predefine in any case – “may begin and end with cashing the cheque...Belief, justification and truth need not come near the entire operation”. Even news reports are a “production performance ... not a capturing or mirroring of some original state of affairs.”. What place is left for “commitment to truth”, they ask.

How might the ideals of education change in such a world? Rather than the pursuit of truth, perhaps students would be pursuing whatever “transferable skills” enable them to gain advantage in the post-modern world. Rather than aiming to develop, emancipate, empower, inspire students, perhaps teachers should be seeing students as a means to career advancement, and schools and universities should be seeing students as customers or as products or simply as one of many indicators of managerial efficiency.

Lankshear, Peters & Knobel seem to want to distance themselves from such possibilities arising from the commodification of knowledge, when they declare that they are not “endorsing, advocating or passively accepting the direction of these changes”, but that they are rather “identifying them as matters educationists have not to date taken sufficiently seriously.”.

Consideration of the claims about the influences of technology on contemporary knowledge practices

It does seem as though there has been some increased flexibility in traditional boundaries between disciplines in recent years. However, it is arguable that a questioning of meta-narratives about the warranting of knowledge in distinct disciplines can be solely attributable to new information technologies, given that such philosophical moves were evident before the advent of personal computers. Perhaps it might be claimed that increased access to means of public communication is increasing tendencies towards “multiplicity of language games”; but this too is arguable, in that irony is not uniformly distributed across the Internet. Furthermore, given examples of pre-Enlightenment practice such as the intermingling of natural science, mathematics, philosophy, astrology, alchemy and theology, it is uncertain that the alleged rigidity of disciplines is of ancient origin. There is also no sign that uses of traditional conversational devices involving truth, reasoning and evidence are on the verge of extinction, even in academic discussions, political debate and everyday discourse.

The claim that for two thousand years knowledge has been perceived solely as propositional and that it took the invention of multimedia computers for images to play an epistemological role other than to “illustrate, summarise or convey propositional content” seems implausible, given the historical valuing of rhetoric, parables, ritual, music, spirituality, fine art and magic. It is also perhaps worth suggesting that in taking seriously a largely proposition-based journal article we are assuming that such articles contain valuable knowledge. However, perhaps Lankshear, Peters & Knobel have in mind a particular school of philosophers who are doing this “perceiving”, this “constructing”, this “seeing as”, rather than some notional “ordinary person”, somehow typical of all cultures in all societies for two millennia. Nevertheless, if one is considering empirical investigations that might assist with the problem of what should be taught, is it more helpful to catalogue perceptions of the nature of knowledge than to identify what knowledge people value?

The valuing of “an ability to perform” described by Lankshear, Peters & Knobel as distinctive of knowledge practices involving new information technologies does not seem completely removed in nature from the status accorded to the master mathematicians of medieval Italy, say, or the

rhetoricians of ancient Greece. It is also not clear that “making, doing or acting” in an interesting way is necessarily inconsistent with the idea that there might be pre-existing knowledge to be comprehended. Examiners, for example, are currently encouraged to assess both “skills” and “understanding”. The very notion of interrogating “information sources” such as a “Web” seems also to be predicated on there *being* knowledge out there, somewhere, that already exists. The idea of a “performance epistemology” has some problems associated with it: for example, just because people have obtained your attention, it does not mean that they have anything of value to say to you; and who is to say that this particular hyperlink is the important choice of destination for a particular purpose? But it would be interesting to explore the claim that Web encourages innovation not only in “playing the game” but also in “the very rules of the game”.

It is ambiguous whether Lankshear, Peters & Knobel want to claim some sort of correlation between the development of theories of distributed cognition and the advent of networked technologies. Furthermore, it is not clear whether they are claiming that new technologies somehow validate labelling as “knowledge” the products of research “performances” that do not aim to capture some state of affairs.

Nevertheless, it does seem clear that knowledge practices are affected in some quite basic ways: personal computers enable faster and more diverse analyses of data and presentation of findings; while the Internet provides greater opportunities for data gathering, dissemination and discussion.

Examination of the argument

The basic structure of the central argument offered by Lankshear, Peters & Knobel is as follows:

1. Educational practice is underpinned by epistemology.
2. The advent of new technology is profoundly changing contemporary knowledge practices.
3. Epistemology properly understood should take account of contemporary knowledge practices.
4. Educational practice should therefore change as a result of changing epistemology.

The claims can be appraised individually, but the argument as a whole depends on the identification of “epistemology” with “accounts of knowledge practices”:

“Practices involving new ICTs – and, notably, the Internet – occurring within non-formal and non-educational sites have crucial significance for how we think about knowledge and truth, and about their relationship to educational work. It is high time that educationists tried to ‘tell the larger story as it is’, and to face square on its implications for established epistemological positions, and for educational practices and emphases predicated on these.”

So the argument runs: educational practice is underpinned by accounts of knowledge practices; knowledge practices are changing; accounts of knowledge practices should take account of contemporary knowledge practices; so educational practice should therefore change as a result of changing accounts of knowledge practices.

However, this identification will not be universally accepted. Here is one example of an alternative understanding of epistemology, drawing on the work of Karl Popper:

Popper (1972) talks about three worlds: “World 1” is the physical world of stones, elephants, bodies, and the like; “World 2” is the subjective world of our conscious experiences, ideas, feelings, and the like; “World 3” contains public or intersubjective knowledge that is accessible to other people (rather than just being inside a person’s head). Examples of knowledge in World 3 include “theories published in journals and books and stored in libraries; discussions of such theories; difficulties or problems pointed out in connection with such theories; and so on.” (p. 73). World 3 is always in flux, because public knowledge changes. It contains false theories as well as true, and problems as well as arguments. Arithmetic, gravity, flat-earth theory, astrology, the Wars of the Roses, the challenge of setting the VCR, and Zoroastrianism belong to World 3. Furthermore, a text in World 3 does not contain a fixed meaning – a person’s attempt to grasp a World 3 theory or problem requires conjectures what is meant.

Of course this terminology does not presume particular ontological commitments – many philosophers would deny that World 3 exists outside of World 2; some would deny that World 1 exists independently of World 2; some would want to be agnostic about all three worlds. However, for the sake of illustrating how the argument offered by Lankshear, Peters & Knobel depends on the identification of “epistemology” with “knowledge practices”, we will talk about these three worlds discretely.

Somewhat surprisingly, given Popper’s many criticisms of post-modernism, there are some strong commonalities with the social epistemology described by Lankshear, Peters & Knobel.

For example, although Popper pointed out a serious problem with idea that studying how World 3 is socially developed can be a route to objectivity, and although he himself is not agnostic on the reality of the three worlds, it is clear that his World 3 *is*, in a strong sense, socially constructed.

To clarify this claim, one needs first to note that Popper see knowledge as conjectural rather than as true, justified belief:

“... a theory may be true even though nobody believes it, and even though we have no reason for accepting it, or for believing that it is true; and another theory may be false, although we have comparatively good reasons for accepting it.” (Popper, 1963, p. 225)

Knowledge consists in *conjectures* that are subjected to some kind of community-based error-elimination rather than in undeniable conclusions drawn directly from theory-free observations. All source of authority – including observation – are theory laden, so there can be no neutral description of facts. Therefore the “basic statements” that count as potential falsifiers for a theory require at least some consensus within a community at a moment in time if they are to decide between competing theories. Moreover, although acceptance or rejection of a theory is always tentative, what counts as knowledge (in the public sense) are conjectures that have survived critical scrutiny, although in other societies or at other times these conjectures might clash with accepted theories and so might be rejected as knowledge. Furthermore, what researchers observe depends on the problem being pursued and their background knowledge; and what problems are pursued depends on the interests of individual researchers and on what people are prepared to fund; so the interests and beliefs of the community have an influence on what knowledge is constructed.

The question then is whether, with this variation on social epistemology (the study of how World 3 is socially constructed), whether the argument offered by Lankshear, Peters & Knobel still works:

1. Educational practice is not “underpinned” by social epistemology, because there are a whole host of background theories, expectations, accidents and local or historical circumstances other than the study of how World 3 is socially constructed that might have influenced how practice has evolved; but it is plausible that the arguments given for or against particular aspects of educational practice should at least draw on generally agreed theories about how World 3 is socially constructed.
2. New technology does appear to be having an influence (with the caveats mentioned earlier) on some of the contemporary ways in which knowledge is generated and shared.
3. It is almost a tautology that social epistemology should be informed by contemporary knowledge practices, however, as will be seen shortly, “epistemology” might include more than just social epistemology.
4. Unfortunately, in this formulation, it does not follow that educational practice should therefore change as a result of changing epistemology. Firstly, certain changes in contemporary knowledge practices may not actually make substantive differences to theories about how World 3 is socially constructed (depending on the nature of the practices and theories). Secondly, even if theories about how World 3 is socially constructed were to change, educational practice might – when it comes down to it – stay the same. However, the arguments used in to support aspects of educational practice might change. Thirdly, even if educational practice were to change, this change might be as a direct result of the new

contemporary knowledge practices themselves rather than because of changes to theories about how World 3 is socially constructed.

There may be more to epistemology than just social epistemology

In the simplest terms, a traditional concern of epistemology has been the problem of how to find out how things are, what is the case, what the world is like. Philosophers such as Descartes were not engaged in some idle academic exercise of playing with words such as “knowledge”, “truth”, “reason” and “justification”. Theologians used sacred texts and long-established teachings to try to decide which descriptions of the world and which answers to questions about the world are correct. Scientists making observations of the world were well aware that appearances could be deceptive, that observations could have multiple interpretations, and that it was not always possible to observe directly phenomena that might help to decide between explanations.

A task then for philosophers has been to see if there are principles and procedures that help one identify how to determine what is the case and how to avoid accepting what is not the case. Hence the whole historical paraphernalia of justification, truth, rationality, distinctions between opinion and knowledge, and propositional logic.

Of course social epistemologists, while recognising that this Enlightenment agenda is a prevalent social influence on knowledge processes, would want to shift the classical focus on the individual and on a small number of objective, timeless, value-neutral, non-empirical principles and meta-narratives associated with knowledge to the plurality of culturally-specific, politically-motivated social practices, processes, forces and influences that are actually responsible for knowledge production in contemporary communities.

But in emphasising that knowledge is socially constructed, we can also forget that knowledge is also *individually* constructed. It is through someone pursuing interesting problems that he or she constructs conjectures and thinks of empirical and analytical ways to decide between conjectures. Of course his or her thinking is influenced by prior theories “of persons, places, things, linguistic usages, social conventions, and so on”, but his or her creative ability to invent new solutions to problems and new ways to critique solutions means that the social context is insufficient to determine what knowledge is constructed.

This means that there may be room for a “subjective” epistemology (the study of the individual’s relationship with World 3) *in addition to a* social epistemology. The study of the individual is *complementary* to the study of the social; the two are not mutually exclusive.

Furthermore, we may be able to examine the extent to which particular theories in World 3 solve the problems they were intended to address; and whether proposed criticisms, arguments, or empirical tests really help to decide between particular competing conjectures. This means that there may be room for an “objective” epistemology that considers the relations between problems, theories and error-elimination.

This tripartite epistemology – allowing for social, subjective and objective dynamics in the production of knowledge – has implications for education. It means that students cannot really understand a theory without understanding the historical problem it was intended to solve, without understanding why this problem was seen as important by the relevant community, and without understanding the state of the relevant individuals’ interests and background theories at the time. It means that the steps that have been taken to eliminate error are central to understanding why certain theories have the status of “knowledge”. It means that students need to learn how to form communities in which they pursue a range of difficult problems of interest to them; in which bold, imaginative conjectures are made; and in which error-elimination is encouraged in a spirit of friendly co-operation in order to get closer to the truth. Popper propounds the apparently controversial idea that people with different views can sometimes learn from each other.

Conclusion

Lankshear, Peters & Knobel argue that traditional versions of epistemology must be replaced by a post-modern social epistemology because of changed social practices brought about by new technology; and that educational practice must consequently be reconsidered. Their argument depends on the identification of “epistemology” with “accounts of knowledge practices”, yet there may be more to the study of knowledge than this.

Arguments given for or against particular aspects of educational practice might draw on generally agreed theories about how public knowledge is socially constructed; but it might also draw on theories about how students interact with particular domains of knowledge, and on theories about relations between problems, theories and error-elimination within those domains. Variations in the epistemology described by Lankshear, Peters & Knobel might provide support for different proposals for changing educational practice. However, changes in educational practice might be influenced directly by changes in knowledge practices in society as much as by theoretical accounts of knowledge.

Technology can change our practices, yet perhaps there is a danger of being over-impressed by technology. There is more to life than what can be done with technology: our knowledge is not wholly determined by it and perhaps our curriculum should not be either.

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